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LXXXIV. *A Letter from the Rev. William Henry, D. D. to the Right Honourable the Lord Cadogan, F. R. S. concerning the Copper-Springs in the County of Wicklow in Ireland \**

My Lord, Ann-street, Dublin, Apr. 18, 1752.

Read June 18, 1752. **H**AVING, in my progress to visit the charter-schools, passed by the rich copper-mines in the county of Wicklow, I judge, that it will not be unacceptable to your lordship to receive some account of them.

These mines lie in the southern part of the county of Wicklow, upon the river Arklow, on each side of that river, and about seven miles westward from the town of that name, among hills, that rise to the height of small mountains.

The mine, which was formerly wrought on, is that of Ballymurtogh, on the south bank of the river. It yielded vast profit to the undertakers; but, on account of some difference between Mr. Whalley and the company, it has been disused for some years past.

This is amply compensated by the far richer mines of Crone-Bawn (in Latin *Corona alba*) on the north side of this river.

Crone-

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\* An account of springs of the same kind in Hungary may be seen in Dr. Edward Brown's *Travels*, p. 68, 69, edit. 1685, fol. Count Marfigli's *Danubius Pannonico-Mysicus*, tom. III. p. 25. and Matthius Belius's *Notitia Hungaria*, tom. II. p. 393, 394. There is published, in the *Giornale de Letterati d' Italia*, tom. XXVII. Art. IV. p. 186, & seq. a second letter of Signor Agostino Soderini, of Venice, relating to the art of metallurgy, in which he describes the method of changing iron into copper by vitriol.

Crone-Bawn is an hill of two miles in circumference, and, as near as I can guess, about 1000 feet in height, swelling regularly in the form of a large inverted bowl. The bowels of this hill are, on all sides, full of rich mines, as appears by the shafts, which have been sunk in different parts of it. But the principal works lie on the east side, about half way up the hill. Here I saw several shafts, sunk from 50 to 70 fathoms deep, as the directors of the works informed me. In sinking these shafts, the first mineral met with is an iron stone. Beneath this, they arrive at a lead ore, which seems mix'd with clay, yet yields a large quantity of lead, and some silver. Under this lies a rich rocky silver ore, which sparkles brightly, and yields seventy-five ounces of pure silver out of a ton of ore, beside a great quantity of fine lead.

Having pierced some fathoms thro' this, they arrive at the copper ore; which is very rich, and may be pursued to a vast depth.

There are five hundred men employed in these mines; and having inquired from several of them, how they could live in these caverns? they said, that they had their health very well; and that there was a particular quality in the copper-water to cure, immediately, all sores in their skin or flesh. Their pay is eight pence a day.

In order to carry off the water from the mines, there are levels carried on a great way under-ground, from the lower part of the hill. Out of these levels issue largest reams of water, most strongly impregnated with copper.

An accidental discovery, which happen'd not long ago, is like to make these streams more beneficial than

than all the rest of the mines. Some of the workmen, having left an iron shovel in the stream, found it some weeks after incrustated with copper, insomuch that they thought it converted into copper. This gave the hint of laying bars of iron in these streams, which is done in the following manner :

Oblong pits are dug, ten feet long, four wide, and eight deep : the bottom laid with smooth flags ; the sides built up with stone and lime, with wooden rude beams across the pits to lay the iron bars on. Chains of these pits are continued along the stream, as far as the directors please ; for the water never abates of its quality, if it were convey'd from pit to pit thro' a thousand. Soon after the iron bars are laid in these pits, they contract a copper rust, which, by degrees, intirely eats away the iron. The copper, which is in the water, being thus continually attracted and fixed by the iron, subsides to the bottom of the pit. To hasten this dissolution, the iron bars are sometimes taken up, and the rust rubb'd off them into the pit. In the space of twelve months the whole bar is commonly dissolved, if the iron be soft ; for steel or hard iron will not do here. The stream is then turn'd off the pits ; and the men with shovels throw up the copper, which lies on the flag at the bottom, like reddish mud. This mud, being laid in an heap, and as soon as dry, becomes a reddish dust ; of which I send your lordship an ounce, that I took up on the spot. It is then smelted into copper.

This being the apparatus, the product is thus. One ton of iron in bars produces a ton and 19 hundred and an half weight of this copper mud or dust. Each ton of this mud produces, when smelted, 16 hundred

hundred weight of the purest copper, which sells at ten pounds *per* ton more than the copper, which is made of the ore. There are about 500 tons of iron now laid in these pits; and the proprietors may, with proportionable advantage, lay in many thousands.

The water, that runs from these mines, enters the river Arklow on New Bridge; and is of so corrosive a nature, that no fish can live in this large river from hence to the sea.

If your lordship thinks these accounts worth notice, you may communicate them to such of your friends, and other curious persons, as you please.

I am, with the sincerest respect,

Your lordship's most obedient,

and most humble servant,

William Henry.

**LXXXV.** *Extract of a Letter to Dr. Maty, F. R. S. from Geneva, concerning the Introduction and Success of Inoculation in that City.*

Read June 18, 1752. **I**N September 1750, the practice of inoculating the small-pox was first introduced into Geneva. The example was set by a young lady; and was, the next year, follow'd in the hospital of foundlings, where it was admitted by an order of the governors, and authorized by the magistrates.